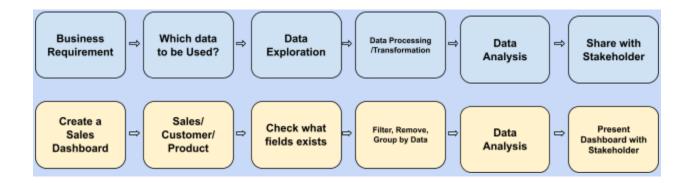
DATA ANALYST/BUSINESS ANALYST ROADMAP 2024/2025

Kickstart your Data Analytics Career in 3 months with this comprehensive end-to-end Roadmap!!

Designed to help you learn data analyst skills from the ground up, this detailed guide covers everything you need including:

- 1. Skills with resources,
- 2. Hands-on projects,
- 3. Essential soft skills,
- 4. Resume Templates with tips, and an Interview Preparation Guide



Core Responsibilities of a Data Analyst

- 1. **Data Collection and Organization:** Collect and organize data from multiple sources, including databases, APIs, and external datasets.
- 2. **Data Cleaning and Validation:** Clean and validate data to ensure accuracy, completeness, and reliability before analysis.
- 3. **Statistical Analysis:** Use statistical tools and methods to interpret data sets, focusing on identifying trends, patterns, and correlations.
- 4. **Data Visualization:** Create visualizations such as charts, graphs, and dashboards that make complex data understandable and actionable.
- Presentation of Insights: Present findings and recommendations to business leaders and stakeholders, effectively communicating data-driven insights.

6. **Cross-Team Collaboration:** Work closely with other teams, including product, marketing, and operations, to develop strategies based on data insights.

Requirements for Becoming a Data Analyst

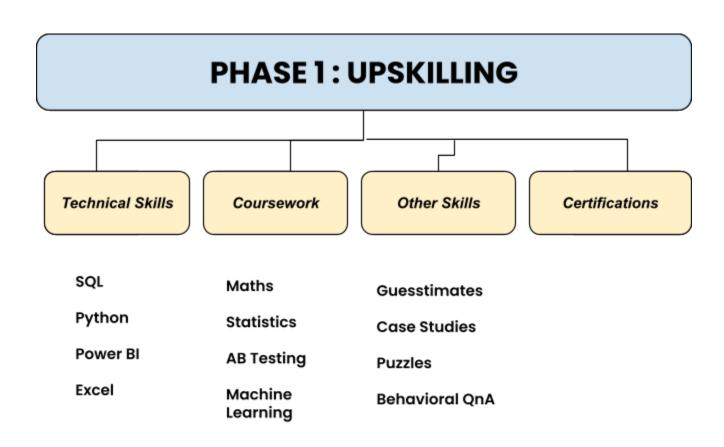
- 1. Any Bachelor's Degree
- 2. Technical Skills
- 3. Soft Skills
- 4. Domain Knowledge
- 5. Relevant Coursework
- 6. Certifications

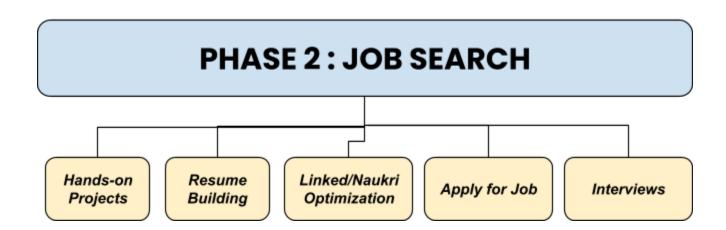
Salary & Career Graph:

Role	Experience	Salary
Entry Level	0 - 1 Years	5 - 10 LPA
Associate Level	1 - 3 Years	11 - 15 LPA
Mid-Senior Level	3- 6 Years	15 - 23 LPA
Lead Level	6 - 8 Years	23 - 37 LPA
Manager Level	8 - 12 Years	37 - 55 LPA
Advanced Level	12+ Years	55+ PA

^{*} **Note:** The minimum and maximum salary ranges vary depending on the type of company. Product companies typically offer 25-50% higher salaries compared to service-based or consulting companies *

Roadmap to Landing a New Role Data Analyst/ Business Analyst





PHASE 1:

UPSKILLING

1. TECHNICAL SKILLS

Technical Skill #1 - Excel (Basic + Advanced)

Excel is essential for Data Analysts because it offers powerful tools for data manipulation, analysis, visualization, and reporting, making complex data insights accessible and actionable.

Topics Covered:

- Basic formulas: Learn essential functions like SUM, AVERAGE, MEAN, MEDIAN, SUMPRODUCT, CONCATENATE.
- Advanced formulas: Explore functions such as VLOOKUP, INDEX, MATCH, IF, COUNTIF, SUMIF for more complex calculations.
- Data Management: Remove duplicates and apply conditional formatting to enhance data clarity.
- Data Visualization: Master creating charts, applying filters, sorting data, and utilizing slicers for effective visual representation.
- Pivot Tables and Charts: Understand the power of pivot tables and pivot charts for dynamic data analysis and reporting.
- Additional Topics: Explore data validation, named ranges, and array formulas for advanced data manipulation and analysis.

Day 1 Learning of Excel

- 1. What Is Data Analytics? An Introduction (Full Guide) https://www.youtube.com/watch?v=yZvFH7B6gKl
- 2. Data Analyst Roles and Responsibilities https://www.youtube.com/watch?v=Bfqu75obvyg
- 3. Difference between Data Analyst, Data Scientist & Business Analyst https://www.boardinfinity.com/blog/difference-between-data-analyst-data-scientist-busine ss-analyst/
- 4. A Day in the Life of a Data Analyst https://www.voutube.com/watch?v=uSTtLpstV-o
- Data Analytics vs Data Science

https://www.youtube.com/watch?v=dcXghMghZUo

6. Data Analyst vs Data Scientist | Responsibilities, Salaries, Skills, Education https://www.youtube.com/watch?v=bxlF9X9k2lE

Day 2 of Learning Excel

- 1. Microsoft Excel Tutorial for Beginners Full Course https://www.youtube.com/watch?v=VI0H-qTclOg&t=3s
- 2. The Beginner's Guide to Excel Excel Basics Tutorial https://www.youtube.com/watch?v=rwbho0CgEAE

Day 3 of Learning Excel

- 1. Understanding Different Types of Data https://www.youtube.com/watch?v=Ci-ICe_4Giw
- 2. Data Validation

https://www.youtube.com/watch?v=nMxl1_NAcxc
https://www.youtube.com/watch?v=SIWIgMFpsPg

3. Converting Data Types:

https://www.youtube.com/watch?v=XFTIPoaofvo https://www.youtube.com/watch?v=3mkaWR-tH-l https://www.youtube.com/watch?v=sVrtkxjfDkc https://www.youtube.com/watch?v= uM4n6ad3x0

Day 4 of Learning Excel

- 1. Importing Data from External Sources https://www.youtube.com/watch?v=yWA6If6CvcM
- 2. Data Connection between Excel Workbooks https://www.youtube.com/watch?v=ze7c96Lkrww
- 3. Excel to Connect to SQL Server Data https://www.youtube.com/watch?v=UzfYbWZr6ro

Day 5 of Learning Excel

- Excel Formulas and Functions Tutorial https://www.youtube.com/watch?v=Jl0Qk63z2ZY
- 2. MS Excel Cell Reference

https://www.youtube.com/watch?v=LFlykJmL4M8

- 3. Using Relative References in Named Ranges https://www.youtube.com/watch?v=7YMrHw1pa10
- Excel Sorting and Filtering Data <u>https://www.youtube.com/watch?v=O28-xL5YGkE</u>
- Excel Tables Overview <u>https://www.youtube.com/watch?v=d4yrHvcyesY</u>
- How to Enter Named Ranges in formulas in Excel https://www.youtube.com/watch?v=3BXivKqAdkY
- 7. Excel Charts and Graphs Tutorial https://www.youtube.com/watch?v=eHtZrlb0oWY
- 8. Creating and Formatting Charts in MS Excel https://www.youtube.com/watch?v=qyITMiBrmqA
- Add and Change Chart Titles in Excel 2010 https://www.youtube.com/watch?v=pfzhDdT0VS0

Day 6 of Learning Excel

- Excel Formulas and Functions | Full Course https://www.youtube.com/watch?v=Y8xhrUa3KH4
- 2. Top 10 Most Important Excel Formulas Made Easy! https://www.youtube.com/watch?v=ShBTJrdioLo
- 3. How to use Power Pivot in Excel | Full Tutorial https://www.youtube.com/watch?v=rB_liYbOo7w
- 4. Ultimate Excel PivotTables Tutorial: Beginner to Advanced 3.5 Hours! https://www.youtube.com/watch?v=02-5BsJxqzU&list=PLzj7TwUeMQ3gu_cJg5cV8RDdBNUVOvG5u
 - 5. Conditional Formatting in Excel | Excel Tutorials for Beginners https://www.youtube.com/watch?v= eZRkmRfVTM
 - 6. Cleaning Data in Excel | Excel Tutorials for Beginners https://www.youtube.com/watch?v= jmiEGZ6PIY

Day 7 of Learning Excel

- Advanced Pivot Table Techniques (to achieve more in Excel) https://www.youtube.com/watch?v=yHzT_BUggQk
- 2. How to Make Pivot Chart in Excel https://www.youtube.com/watch?v=0WstANBX-Gk
- Excel Slicers, EVERYTHING You Need to Know includes workbook with step by step instructions https://www.youtube.com/watch?v=2H7aOHKZ6PY&t=235s
- 4. Data Visualization Techniques in Excel https://www.youtube.com/watch?v=PTVTw2rZ4EM
- 5. Excel Array Formulas Explained with MIN and IF Functions (Part 1 of 5) https://www.youtube.com/watch?v=123Cy8FkMLY
- Excel Time Series Forecasting Part 1 of 3 https://www.youtube.com/watch?v=gHdYEZA50KE
- Excel Shortcut Keys | Full Guide <u>https://www.youtube.com/watch?v=T5vSDAX1HjY</u>

** Additional Resources **

- 1. IBM Data Analysis in Excel & R Certificate https://www.coursera.org/learn/excel-basics-data-analysis-ibm
- Analysing Data with Excel | IBM https://www.edx.org/learn/excel/ibm-analyzing-data-with-excel/

** Certificates **

Excel for Data Analysis
 https://www.coursera.org/professional-certificates/ibm-data-analyst-r-excel

Technical Skill #2 - SQL (Most Important)

SQL is crucial for Data Analysts as it enables efficient querying, manipulation, and analysis of large datasets to derive actionable insights.

In SQL, you need to focus on both theory and practical problem-solving.

From Day 1 to Day 8, start by covering SQL theory thoroughly. After that, dive into solving practical questions on LeetCode.

Topics Covered:

- Basic SQL Queries: Learn to write SELECT statements, filter data with WHERE, and sort results using ORDER BY.
- Joins: Understand INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN to combine data from multiple tables.
- Aggregations: Use functions like COUNT, SUM, AVG, MIN, and MAX to perform calculations on data sets.
- Group By: Aggregate data using GROUP BY to summarize information and use HAVING to filter aggregated results.
- Subqueries and CTEs: Implement subqueries and Common Table Expressions (CTEs) for complex queries and improved readability.
- Data Modification: Perform data insertion (INSERT), updates (UPDATE), and deletions (DELETE) to manage data.
- Indexes and Performance: Optimize query performance by understanding indexes and query execution plans.

Day 1 of Learning SQL

- Learn What is Database | Types of Database | DBMS https://www.youtube.com/watch?v=j09EQ-xlh88
- Introduction to Relational Databases https://www.youtube.com/watch?v=WI9dE8-TFAc
- 3. SQL Explained in 100 Seconds https://www.youtube.com/watch?v=zsjvFFKOm3c
- 4. Entities, Rows, and Columns Databases tutorial https://www.youtube.com/watch?v=f_F_q20a6Cc
- 5. What is SQL? Future Career Scope & Resources

https://www.youtube.com/watch?v=UOJZTqA5Loc

6. Introduction to Structured Query Language | All Points regarding its Features and Syllabus

https://www.voutube.com/watch?v=323H mOOWQ4

7. Introduction to SQL | DDL, DML, DQL, DCL, TCL Commands in SQL https://www.youtube.com/watch?v=U2T_LCdO14Y

Day 2 of Learning SQL

- Basic Structure of SQL https://www.youtube.com/watch?v=aLMcHQKU5ww&t=435s
- - 5 Basic SELECT Statement Queries in SQL https://www.youtube.com/watch?v=5tEApCGqpEQ&t=278s
 - SQL Select Statement Tutorial | SQL Select Query Explained | SQL Tutorial For Beginners | SimpliCode https://www.youtube.com/watch?v=1cWUUELO42c&t=728s
 - How to Filter with the WHERE clause in SQL https://www.youtube.com/watch?v=4Uv0o8IBqw0&t=305s
 - 6. Oracle SQL Sorting Data https://www.youtube.com/watch?v=TxIf1byilAA&t=1s

Day 3 of Learning SQL

1. Inner Join, Left Join, Right Join and Full Outer Join in SQL Server | SQL Server Joins

https://www.youtube.com/watch?v=KTvYHEntvn8

- How to Join two or more than two Tables using multiple columns | How to Join Multiple Tables #Joins
 - https://www.voutube.com/watch?v=5OpBiU-OWh8
- 3. SQL Aggregate Functions SUM, AVG(n), COUNT, MIN, MAX Functions | DBMS

https://www.youtube.com/watch?v=Yr4pHPZCshA

4. 5 SQL Queries and Subqueries (part-3) | Group By clause | Database Management System

https://www.voutube.com/watch?v=apNmMWqFFRq

Day 4 of Learning SQL

- Subquery in SQL | Correlated Subquery + Complete SQL Subqueries Tutorial https://www.youtube.com/watch?v=nJIEIzF7tDw
- 2. A Step-By-Step Guide To SQL Subquery https://www.simplilearn.com/tutorials/sql-tutorial/sql-subquery
- Nested Queries | SQL | Tutorial 18 https://www.youtube.com/watch?v=IBpSMeQjNqQ
- 4. SQL WITH Clause | How to write SQL Queries using WITH Clause | SQL CTE (Common Table Expression)

https://www.voutube.com/watch?v=QNfnuK-1YYY

 CTE in SQL https://www.geeksforgeeks.org/cte-in-sql/

6. CTE (Common Table Expression) IN SQL With Examples| ADVANCE SQL TUTORIAL https://www.geeksforgeeks.org/cte-in-sql/

Day 5 of Learning SQL

- SQL Window Function
 https://www.youtube.com/watch?v=Ww71knvhQ-s&t=377s
- 2. Secret To Optimizing SQL Queries https://www.youtube.com/watch?v=BHwzDmr6d7s&t=227s

From Day 1 to Day 5, focus on covering your SQL theory. Once you've completed the theory, install MySQL on your system and start solving LeetCode questions. Follow these steps to get started

Step 1: Install the MySQL https://www.javatpoint.com/how-to-install-mysql

Step 2: Download this Complete Leetcode Question with Answers

Now that you have MySQL installed on your system, you can run SQL code end-to-end. You also have a list of questions and answers from the downloaded LeetCode Q&A PDF. Practice these questions on your system to build your skills

You can download SQL LeetCode Q&A PDF from Here :-

https://topmate.io/mazher khan/918497

Technical Skill #3 - Python

Python is crucial for Data Analysts because it enables efficient data manipulation, analysis, and visualization with powerful libraries like Pandas, NumPy, and Matplotlib.

Topics Covered:

- Python Basics: Understand data types, variables, control structures (loops, conditionals), and basic functions.
- Data Manipulation with Pandas: Use DataFrames for data cleaning, transformation, and aggregation. Learn to handle missing values and merge datasets.
- Data Visualization: Create visualizations using libraries like Matplotlib, Seaborn, or Plotly to represent data insights.
- Statistical Analysis: Perform statistical operations such as hypothesis testing, correlation, and regression using libraries like SciPy or StatsModels.
- Data Import and Export: Import data from various sources (CSV, Excel, SQL databases) and export data to different formats.
- Handling Large Datasets: Use libraries like Dask or PySpark for working with large volumes of data and parallel processing.

Day 1 of Learning Python

1. What is Python?

https://www.youtube.com/watch?v=WvhQhj4n6b8

- 2. Is Python Really Needed For a Data Analyst Job? https://www.youtube.com/watch?v=wKqt7ThgR1g
- 3. How to download and install Jupyter Notebook for Windows 10 / 11 with Python tutorial

https://www.youtube.com/watch?v=HLD-LI_-IT4

4. Install Anaconda Python, Jupyter Notebook And Spyder on Mac / MacOS (2024)

https://www.youtube.com/watch?v=drbaFALFKDq

- 5. All Python Syntax in 25 Minutes Tutorial https://www.youtube.com/watch?v=PNSIWjWAA70
- 6. Top 10 Python Libraries in 2023 https://www.youtube.com/watch?v=zL4JocjDn7g

Day 2 of Learning Python

- Python Variables & Data Types https://www.youtube.com/watch?v=syH5OneJb-U
- 2. Arithmetic Operators in Python https://www.youtube.com/watch?v=iyOVgQDkx1E
- Python If Else Elif Statements | https://www.youtube.com/watch?v=wIXfXYf17ok
- Loops In Python https://www.youtube.com/watch?v=M0RsvJnaGYg
- Break Continue Pass in Python https://www.youtube.com/watch?v=yCZBnjF4 tU

Day 3 of Learning Python

- Functions in Python https://www.youtube.com/watch?v=dyvxxJSGUsE
- Lambda() Function https://www.youtube.com/watch?v=LQatU6WFZiM
- 3. Python Built in Modules https://www.youtube.com/watch?v=1oFneicTall
- 4. Built-in Functions in Python https://www.youtube.com/watch?v=hCMnJT14XTw
- 7 Python Built-in functions that will improve your life https://www.youtube.com/watch?v=2_xfAoJFWBY

Day 4 of Learning Python

 Python Lists <u>https://www.youtube.com/watch?v=IFzHFUvGL7I</u>

2. Python Dictionaries https://www.youtube.com/watch?v=LTXnQdrwyrw

3. Python Tuples https://www.youtube.com/watch?v=wRC4H-k57eg

4. Python Sets https://www.youtube.com/watch?v=r3R3h5ly_8g

Python NumPy Tutorial for Beginners https://www.youtube.com/watch?v=QUT1VHiLmmI

Day 5 of Learning Python

- Introduction to pandas Library in Python https://www.youtube.com/watch?v=jBW1U9BqBt8
- 2. Pandas Functions Python CSV File Reading and Writing Complete Tutorial https://www.youtube.com/watch?v=cD4Hw8 bdMc
- Merging DataFrames in Pandas https://www.youtube.com/watch?v=TPivN7tpdwc
- 4. groupby() and merge() function in Pandas https://www.youtube.com/watch?v=wr-4NYGzB2o
- Data Cleaning in Pandas | Python Pandas Tutorials https://www.youtube.com/watch?v=bDhvCp3 | IYw
- Exploratory Data Analysis in Pandas https://www.youtube.com/watch?v=Liv6eeb1VfE

Technical Skill #4 - POWER BI

Power BI is important for Data Analysts because it enables them to visualize, analyze, and share data insights quickly and interactively, enhancing data-driven decision-making

Topics Covered:

- **Data Import and Transformation**: Import data from various sources (Excel, SQL, APIs) and use Power Query for data cleaning and transformation.
- **Data Modeling**: Create relationships between tables, define measures and calculated columns using DAX (Data Analysis Expressions).
- **Visualizations**: Design interactive reports and dashboards using various visualization types like charts, maps, tables, and slicers.
- Custom Calculations: Implement custom calculations and aggregations using DAX functions for advanced data analysis.
- **Power BI Service**: Publish and share reports, collaborate with team members, and set up scheduled data refreshes in the Power BI service.
- **Performance Optimization**: Optimize report performance by using efficient data modeling techniques, aggregations, and reducing complex calculation

Day 1 Learning POWER BI

- What Is Power BI? | Introduction To Power BI | Power BI Tutorial For Beginners | Simplilearn https://www.voutube.com/watch?v=-DJPRrFQXI
- Power BI Desktop vs Power BI Service| What is the difference between Power BI Desktop and Service? https://www.youtube.com/watch?v=Z8A1IYRyZy0
- 3. How to install Power BI on Windows 10 64-bit https://www.youtube.com/watch?v=GT2NcTE6UEo
- Power BI Desktop on a Mac https://www.youtube.com/watch?v=w1W1cuqn4IA
- Your first 10 minutes of Power BI <u>https://www.youtube.com/watch?v=9tF1IrfLflg</u>

Day 2 Learning POWER BI

- 1. How To Connect Data Sources In Power BI? https://www.youtube.com/watch?v=ZDuQvyZ8stM
- 2. How to Connect Multiple Data Sources in Power BI https://www.youtube.com/watch?v=uR0IJrQHOgM
- 3. Importing Excel Data inside Power BI Desktop https://www.youtube.com/watch?v=LOnXePDb2hQ
- 4. Power BI Tutorial for Beginners: Get Data. Load (1.1.1) https://www.youtube.com/watch?v=hlbgigp-hdc
- 5. Data Cleaning and Transformation https://www.youtube.com/watch?v=iKCXZBRy0g8
- 6. Top 10 Most Important Data Cleaning Methods in Power BI https://www.youtube.com/watch?v=6DopXivHmP4

Day 3 Learning POWER BI

- 1. Understanding Relationships in Power BI https://www.youtube.com/watch?v=OOs-VWf20E8
- 2. Advanced Power BI Technique https://www.youtube.com/watch?v=Ea0VBWw8-mg
- 3. Measures vs. calculated columns in DAX and Power BI https://www.voutube.com/watch?v=ePPi1LLX0sA
- 4. Advanced Scenario Analysis Techniques For Power BI w/DAX https://www.voutube.com/watch?v=RY47z5pvaEc
- 5. Data modeling best practices Part 1 https://www.youtube.com/watch?v=kiVXI7zjSzY
- 6. How to optimise Power BI Performance? https://www.youtube.com/watch?v=Y71 b4W5Ncs

Day 4 Learning POWER BI

- 1. Charts & Visualizations in Power Bi https://www.youtube.com/watch?v=xf7uV KNpU
- 2. Popular Visualizations in Power BI https://www.youtube.com/watch?v=3NV5Jtbhfcw

- 3. How to Format Graphs and Visuals in Power BI https://www.voutube.com/watch?v=ZTTq79-69Zk
- 4. filters & the different types https://www.youtube.com/watch?v=hZSbUU6sT4M
- 5. How to create a Filter on Visual in Power BI https://www.youtube.com/watch?v=8y4yjPYe4-8
- 6. How to use Power BI Slicers https://www.youtube.com/watch?v=9w-lcfOB8bY

Day 5 Learning POWER BI

- How to Create and Use Maps in Power BIhttps://www.youtube.com/watch?v=MzPmXv8o8GU
- Master Scatterplots <u>https://www.youtube.com/watch?v=EMpebK1PzIE</u>
- How to use Drill Down in Power BI https://www.youtube.com/watch?v=ulFY20KTzFQ
- 4. How to use Drill Through in Power BI https://www.youtube.com/watch?v=BbplhqDCWOM
- 5. Custom Visuals https://www.youtube.com/watch?v=zue_byqNx7k

Day 6 Learning POWER BI

- How to Build Power BI Reports from Start to Finish https://www.youtube.com/watch?v=Z2t7l8b1uWU
- 2. How to create Power BI Dashboard https://www.youtube.com/watch?v=8AGxM9y-t6I
- 3. How To Publish Reports Using Power BI Service https://www.youtube.com/watch?v=TIEDtEirblg
- 4. SHARE and COLLABORATE within Power BI https://www.youtube.com/watch?v=q7yyTW2WWXw
- Generate Links, Manage Access and Permissions https://www.youtube.com/watch?v=d2b2btjoMhQ

Day 7 Learning POWER BI

- 1. Data Refresh in POWER BI https://learn.microsoft.com/en-us/power-bi/connect-data/refresh-data
- 2. How to refresh reports https://www.youtube.com/watch?v=kdaolMKsSOA
- 3. What is Schedule Refresh https://www.youtube.com/watch?v=UchtwXH1xQk
- 4. How to Schedule and Refresh Data Sources https://www.youtube.com/watch?v=AkkJ4nW00Zg
- 5. INCREMENTAL REFRESH https://www.youtube.com/watch?v=fZVtlckIYvY

2. Coursework

Coursework #1 - Maths & Statistics

Maths and Statistics are crucial for Data Analysts as they provide the foundation for data interpretation, predictive modeling, and making data-driven decisions with accuracy and confidence.

Here's a day-by-day breakdown of the topics to cover in Maths & Statistics.

To master these topics, you can download my comprehensive Maths & Statistics Notes, which cover everything you need—no need to look elsewhere.

You can download them here:-

https://topmate.io/mazher_khan/912858

Day 1: Introduction to Statistics and Data Collection

- 1. Definitions & importance of statistics
- 2. Types of data: Qualitative vs. Quantitative
- 3. Levels of measurement: Nominal, Ordinal, Interval, Ratio
- 4. Data collection methods
- 5. Sampling techniques: Random, Stratified, Cluster, Systematic

Day 2: Descriptive Statistics & Data Visualization

- 1. Measures of central tendency: Mean, Median, Mode
- 2. Measures of dispersion: Range, Variance, Standard Deviation
- 3. Types of charts: Bar charts, Histograms, Pie charts, Box plots
- 4. When and how to use each type

Day 3: Probability Basics

- 1. Basic probability concepts
- 2. Probability rules and properties
- 3. Conditional probability and Bayes' theorem

Day 4: Discrete and Continuous Probability Distributions

- 1. Binomial distribution
- 2. Poisson distribution
- 3. Normal distribution
- 4. Properties of the normal curve
- 5. Z-scores and probability calculations

Day 5: Sampling Distributions and Estimation

- 1. Concept of sampling distributions
- 2. Central Limit Theorem
- 3. Standard error
- 4. Point estimates and interval estimates
- 5. Confidence intervals for means and

Day 6: Hypothesis Testing Basics

- 1. Null and alternative hypotheses
- 2. Type I and Type II errors
- 3. P-values and significance levels

Day 7: One-Sample and Two-Sample Tests

- 1. Z-test for means
- 2. T-test for means
- 3. Independent samples t-test 4. Paired samples t-test

Day 8: Chi-Square Tests and ANOVA

- 1. Chi-square test for independence
- 2. Chi-square goodness-of-fit test
- 3. One-way ANOVA
- 4. Assumptions and interpretation of results

Day 9: Correlation and Simple Linear Regression

- 1. Pearson correlation coefficient
- 2. Spearman's rank correlation
- 3. Interpretation and limitations
- 4. Regression line and equation
- 5. Interpretation of coefficients
- 6. Goodness of fit (R-squared)

Coursework #2 - AB Testing

A/B testing is crucial for data analysts as it enables data-driven decision-making by comparing different variables to identify the most effective options.

Here's a day-by-day breakdown of the topics to cover in AB Testing

To master these topics, you can download my comprehensive AB Testing Notes, which cover everything you need—no need to look elsewhere.

You can download them here:-

https://topmate.io/mazher khan/988143

Day 1: Fundamentals of A/B Testing and Experimental Design

- 1. Introduction to A/B Testing: Definition, importance, and applications.
- 2. Key concepts: control group, treatment group, hypothesis.
- 3. Experimental Design: Identifying variables (independent, dependent, confounding).
- 4. Randomization and its significance.
- 5. Hypothesis Formulation: Null vs. alternative hypotheses, one-tailed vs. two-tailed tests.

Day 2: Sample Size, Data Collection, and Preparation

- 1. Sample Size Calculation: Understanding statistical power, significance, and determining the required sample size.
- 2. Common errors in sampling.
- 3. Data Collection Methods: Gathering data effectively.
- 4. Data Preparation: Cleaning data, handling missing data, and managing outliers.

Day 3: Statistical Analysis and Interpretation

- 1. Statistical Analysis Techniques: t-tests, chi-square tests, understanding p-values, and confidence intervals.
- 2. Interpreting Results: Distinguishing statistical vs. practical significance.
- 3. Avoiding biases and common pitfalls (e.g., peeking, p-hacking).
- 4. Best Practices for running A/B tests.

Coursework #3 - Machine Learning

Machine learning is essential for data analysts as it allows them to build predictive models and uncover insights from data patterns to drive informed business decisions

Here's a day-by-day breakdown of the topics to cover in Machine Learning

Day 1-2 of Learning ML

- 1. Supervised vs. Unsupervised Learning: Main Differences between them, Different Algorithms, Labeled and Unlabeled Data, Examples
- 2. Regression and Classification: Simple & Multiple Regression Basics, understanding coefficients, residuals, and interpretation of results.

Day 3-5 of Learning ML

- 1. Decision Trees and Random Forests: Decision Trees: Basic structure, splitting criteria Ensemble method, combining multiple decision trees for improved performance and generalization.
- 2. Clustering Algorithms: Introduction to K-means clustering: Basic concept, how it partitions data into clusters based on similarity measures.

Day 6-8 of Learning ML

- 1. Model Performance Metrics: Accuracy, precision, recall, F1-score, ROC curve, and AUC Understand when to use each metric based on the problem context
- 2. Feature Engineering and Selection: Transforming raw data into features that better represent the underlying problem to improve model accuracy.

Day 9-10 of Learning ML

- 1. Evaluation and Validation: K-fold cross-validation, stratified cross-validation, Techniques like regularization for Handling overfitting and underfitting:
- 2. Handling Imbalanced Datasets: Resampling methods (e.g., oversampling, undersampling), class weights adjustment, and evaluation metrics suitable for imbalanced data (e.g., precision-recall curve).

How to learn the above topics? : Google or YouTube the above topics

3. Other Skills

Coursework #1 - Guesstimates

Guesstimates assess your ability to make logical assumptions and perform estimations, which is crucial for handling incomplete or ambiguous data and making informed decisions based on rough calculations.

Sample Questions:

- 1. Estimate #of Smartphones in India
- 2. Estimate # of Uber Rides in Delhi
- 3. Estimate #of Super Cars in Bengaluru

General Approach to Solving Guesstimates

1. Understand the Problem:

- Carefully read the question to identify what is being asked.
- Break down the problem into smaller, more manageable components if needed.

2. Make Assumptions:

- Identify and state any assumptions you need to make to solve the problem.
- Be reasonable and logical in your assumptions. Make sure they are realistic and justifiable.

3. Estimate Key Variables:

- Identify the key variables involved in the problem.
- Make rough estimates for these variables based on available data, general knowledge, or similar examples.

4. Perform Calculations:

- Use arithmetic operations to combine your estimates and assumptions.
- Apply relevant formulas or methods to reach a solution.

5. Validate and Refine:

Review your calculations and assumptions to check for accuracy and reasonableness.

 Adjust your estimates if necessary and ensure that the final answer makes sense in the context of the problem.

6. Communicate Your Solution:

- Present your answer along with a brief explanation of your assumptions and calculations.
- Highlight the key steps you took to arrive at the solution.

To master solving Guesstimates, you can download my comprehensive end-to-end Case Study PDF with Guesstimates etc. which covers everything you need—no need to look elsewhere.

You can download them here:-

https://topmate.io/mazher_khan/912512

Please note that these notes are PAID, as I personally purchase a subscription worth 25,000 INR and create hand-made notes. You won't find such comprehensive notes compiled in one place anywhere else. The value is worth it

Coursework #2 - Case Studies

Case Studies evaluate your analytical thinking and problem-solving approach, helping interviewers understand how you apply data-driven insights to real-world business problems, manage complex scenarios, and derive actionable solutions.

Sample Questions:

- 1. Zomato Orders got dropped by 30%. What do you think?
- 2. How can you improve Netflix?
- 3. What do you think about opening a Coffee Shop at Hyderabad Airport?

To master solving Case Studies, you can download my comprehensive end-to-end Case Study PDF with Guesstimates etc. which cover everything you need—no need to look elsewhere.

You can download them here:-

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Please note that these notes are paid, as I purchase a subscription worth 25,000 INR and create hand-made notes. You won't find such comprehensive notes compiled in one place anywhere else. The value is worth it

Coursework #3 - Puzzles

Puzzles test your creative problem-solving skills and logical reasoning, providing insight into how you approach complex issues, think critically, and find innovative solutions.

Puzzles are commonly asked during college campus hiring and by companies such as American Express, Wells Fargo, and EXL.

A top resource for practicing puzzles is the GeeksforGeeks website, which offers a collection of 70+ puzzles. Be sure to solve all of them to prepare effectively.

https://www.geeksforgeeks.org/puzzles/

Coursework #4 - Behavioural QnA

Behavioral Questions explore how you handle various workplace situations, your teamwork and communication skills, and your ability to navigate challenges and conflicts effectively.

The listed 32 questions are sufficient to crack any Analyst job interview. To answer these questions, you have to follow the STAR method:

- **Situation:** Describe the context or background of the scenario.
- Task: Explain your role and the challenge you faced.
- Action: Detail the steps you took to address the task.
- Result: Highlight the outcomes or impact of your actions.

You can refer to my notes for reference. I have written the questions with answers based on my experience.

https://topmate.io/mazher_khan/1004369

- 1. Give me your Introduction
- 2. Explain any Project that you might have done
- 3. Tell me about a time when you faced a challenging situation at work and how you handled it.
- 4. Describe a situation where you had to work with a difficult team member. How did you handle it?
- 5. Can you give an example of a time when you had to meet a tight deadline?
- 6. Tell me about a time when you went above and beyond your job responsibilities.
- 7. Describe a time when you had to learn something new quickly. How did you approach it?
- 8. Give an example of a time when you had to resolve a conflict within your team.

- 9. Tell me about a time when you made a mistake at work. How did you handle it?
- 10. Describe a situation where you had to influence others to achieve a goal.
- 11. Can you give an example of a project you managed from start to finish?
- 12. Tell me about a time when you received constructive criticism. How did you respond?
- 13. Describe a situation where you had to adapt to a significant change at work.
- 14. Give an example of how you handled a difficult customer or client.
- 15. Tell me about a time when you worked successfully under pressure.
- 16. Describe an instance where you had to collaborate with someone who had a different working style.
- 17. Can you provide an example of a time when you demonstrated leadership skills?
- 18. Tell me about a time when you had to decide with limited information.
- 19. Describe a situation where you had to prioritize multiple tasks. How did you manage it?
- 20. Give an example of a time when you had to persuade others to see your point of view.
- 21. Tell me about a time when you had to handle a significant change in project scope.
- 22. Describe a situation where you had to resolve an issue with limited resources.
- 23. Can you give an example of a time when you implemented a new process or system?
- 24. Tell me about a time when you successfully managed a team or project with conflicting priorities.
- 25. Describe an instance where you had to overcome a significant obstacle to achieve a goal.
- 26. Give an example of how you ensured high-quality work while working on a tight deadline.
- 27. Tell me about a time when you had to negotiate to achieve a favorable outcome.
- 28. Describe a situation where you had to handle an unexpected problem. How did you resolve it?
- 29. Can you provide an example of a time when you contributed to a team's success?
- 30. Tell me about a time when you had to mentor or coach someone. How did you approach it?
- 31. Describe an instance where you had to use data to make a decision.
- 32. Give an example of how you handled a situation where you had to work with incomplete or unclear information.

4. Certificates

Certificates are important for data analyst job interviews because: -

- 1. Validation of Skills: Certificates prove your proficiency in specific tools and techniques.
- 2. **Credibility:** They enhance your resume by showing formal training and meeting industry standards.
- 3. Competitive Edge: They help you stand out in a crowded job market.
- 4. **Benchmarking:** Certificates align your skills with industry expectations.
- 5. Confidence Boost: They ensure your abilities and knowledge during interviews.

Google Data Analytics Professional Certificate

Google Data Analytics Professional Certificate

Microsoft Certified: Data Analyst Associate (Power BI)

• Microsoft Certified: Data Analyst Associate

IBM Data Analyst Professional Certificate

• IBM Data Analyst Professional Certificate

PHASE 2:

JOB SEARCH

1. Hands-on Projects

Projects are important because they demonstrate your practical skills and ability to apply knowledge to real-world problems. They build a strong portfolio, showcase your problem-solving abilities, and help differentiate you from other candidates. Additionally, projects support your professional growth by exposing you to diverse tasks and industry trends.

If you're currently employed, you can showcase the existing projects of your company, whether they're related to reporting, ad-hoc analysis, or other tasks.

If you're a fresher, you can refer to the following links for end-to-end project examples.

- 1. https://youtu.be/MaaphT465 I?si=NQ zzQ1RZ76A03IY
- 2. https://youtu.be/TM4O9x8kBvg?si=Z3yaMYYBrnYYuVQt
- 3. https://youtu.be/qfyynHBFOsM?si=po1pfsXQByBfmO07
- 4. E-commerce Project (Very Popular)
 https://github.com/aaronzguan/Online-Shopping-Cart-Database-Project.gi
 t
- Railway management system <u>https://github.com/aaryanrr/RailwayMGMT.git</u>
- 6. Road Safety Dataset
- 7. https://github.com/ptyadana/SQL-Data-Analysis-and-Visualization-Project s/
- 8. European Soccer Game Analysis https://www.kaggle.com/dimarudov/data-analysis-using-sql/data
- 9. World Population Dataset https://github.com/LoicChamplong/Data-Analysis-SQL/tree/master/Analysis_of_the_2015_World_population
- Top 5 Data Analytics Projects with Resources | Projects for Beginners |
 Rishabh Mishra
- 11. https://www.youtube.com/watch?v=TM409x8kBvg
- 12. Sql Data analysis practice/project https://www.youtube.com/watch?v=1pHYKdyRvrw&list=PLRY-AYJzifh2rPHy6xtPSwwl-jTW_DMQm&index=2
- 13. You can download one Gen-Al Project which I did from here: https://topmate.io/mazher_khan/1150096

2. Resume Building

1. Download my CV template (Senior Data Analyst - 6 years) from here :

https://topmate.io/mazher_khan/947702

2. Free resume template sites

- Novo Resume: https://novoresume.com/resume-templates
- Canva: https://www.canva.com/resumes/templates/
- Resume io: https://resume.io/resume-templates

3. Resources:

- Create the Perfect Data Analyst Resume https://youtu.be/WizLaDdsHUs?si=Y2B1wfKLNW4KUN4Q
- 2. How To Write a Data Analyst Resume To Get A Job https://www.voutube.com/watch?v=ill7vvYRxHE

Here are the top 10 resume-building tips:

- 1. **Tailor Your Resume:** Customize your resume for each job application by highlighting relevant skills and experiences specific to the job description.
- 2. **Use Action Verbs:** Start bullet points with strong action verbs like "achieved," "developed," or "led" to convey your accomplishments.
- 3. **Quantify Achievements:** Include specific metrics, numbers, or percentages to demonstrate the impact of your work.
- 4. **Keep It Concise:** Aim for a clear and concise format, ideally one page for early-career professionals and up to two pages for those with more experience.
- 5. **Highlight Key Skills:** Emphasize both technical and soft skills that are crucial for the role you're applying for.
- 6. **Include Keywords:** Use keywords from the job description to pass Applicant Tracking Systems (ATS) and capture the recruiter's attention.

- 7. **Professional Formatting:** Use a clean, professional layout with consistent fonts, bullet points, and spacing for easy readability.
- 8. **Showcase Relevant Experience:** Focus on your most relevant job experiences, projects, and accomplishments that align with the job you're applying for.
- Include a Summary Statement: Start with a summary or objective statement that highlights your career goals and key strengths.
- 10. **Proofread Carefully:** Ensure there are no typos, grammatical errors, or inconsistencies by proofreading your resume thoroughly or having someone else review it.

3. Update your Naukri/Linkedin

Update Your LinkedIn/Naukri or Job Portal Profile

1. Profile Summary

- LinkedIn: Craft a compelling headline that clearly states your role, skills, and key
 achievements. Use keywords related to Data Analysis to increase visibility in search
 results.
- Naukri/Job Portals: Write a concise and impactful summary that highlights your experience, skills, and career aspirations. Make sure to include keywords relevant to Data Analysis roles.

2. Experience Section

- Detail Your Roles: For each position, provide a clear and concise description of your responsibilities, achievements, and the impact you had. Use bullet points for better readability.
- Quantify Achievements: Include specific metrics and examples (e.g., "Increased sales forecasting accuracy by 20% through advanced statistical analysis").

3. Skills and Endorsements

- Highlight Key Skills: List relevant skills such as SQL, Python, data visualization, statistical analysis, and business intelligence tools. Ensure that these skills are aligned with the job descriptions of the roles you are targeting.
- **Get Endorsements**: Seek endorsements from colleagues, mentors, or managers who can vouch for your expertise in these areas.

4. Certifications and Education

- Showcase Certifications: Add any relevant certifications (e.g., Certified Data Analyst, SQL Certification) to your profile. Ensure they are visible and up-to-date.
- **Update Education**: List your educational qualifications, including any relevant coursework or projects that pertain to Data Analysis.

5. Projects and Achievements

- **Include Notable Projects**: Highlight significant projects you've worked on. Provide a brief description, of your role, and the outcomes achieved.
- Showcase Awards and Recognition: Add any awards or recognitions you've received for your work in Data Analysis.

6. Recommendations

 Request Recommendations: Ask for recommendations from supervisors, colleagues, or clients who can provide testimonials about your work ethic, skills, and contributions.

7. Profile Picture and Banner

- **Professional Picture**: Use a high-quality, professional profile picture. A friendly, approachable image can make a positive impression.
- **Custom Banner**: Consider adding a custom banner that reflects your professional brand or highlights your expertise in Data Analysis.

8. Keywords and SEO

 Incorporate Keywords: Use industry-specific keywords throughout your profile to improve your visibility in search results. Tailor these keywords to the roles you are targeting. • **Optimize for Search**: Regularly update your profile and ensure it reflects the latest industry trends and skills.

9. Networking and Engagement

- Connect with Industry Professionals: Expand your network by connecting with other Data Analysts, recruiters, and industry leaders.
- **Engage with Content**: Share relevant articles, write posts, and engage with content related to Data Analysis to increase your visibility and showcase your expertise.

4. Apply for JOB

Applying for jobs randomly is not an effective approach. A better strategy, which I have personally used, is to create a spreadsheet with a list of 400 companies, including the following fields.

Company	Date Applied	Platform	Recruiter Called?	Interview Schedule d	Follow-u p	Received Offer Letter
Amazon	01-Jan	Linkedin/ Referral	Yes	Yes	No	Yes

You can download the complete 400 companies list from here:-

https://topmate.io/mazher_khan/916331

You can apply to these companies through platforms like LinkedIn, Naukri, and Instahyre. However, remember that **NOT ALL companies, like Zomato etc, are listed on job portals**—some rely solely on referrals. So, connect with people on LinkedIn or reach out to friends to secure referrals.

Use Below Message for Seeking Referral:

Hi [Name],

I hope this message finds you well. I came across an opening for [Position Name] at [Company Name] and am very interested in applying. With my background in [briefly mention your skills/experience relevant to the job], I believe I would be a great fit for this role.

I noticed that you are connected to [Company Name], and I would greatly appreciate it if you could refer me for this position. I have attached my resume for your reference and would be happy to provide any additional information needed.

Thank you for considering my request. I look forward to the possibility of connecting further.

Best regards, [Your Name]

Some Key Steps to Maximize Success

1. Research the Company and Role:

- Understand the job description, responsibilities, and skills required.
- Research the company's culture, values, and recent news to tailor your application.

2. Tailor Your Resume and Cover Letter:

- Customize your resume to highlight relevant skills and achievements using keywords from the job listing.
- Write a targeted cover letter addressing the specific role and company.

3. Leverage LinkedIn, Naukri.com, IIM JOBS, Instahyre:

- Apply directly on job portals like LinkedIn and Naukri.com.
- Connect with recruiters who are hiring for similar roles to increase your visibility.

4. Follow Up Professionally:

- Confirm receipt of your application via email or LinkedIn message.
- Send a follow-up email if you haven't heard back within a week or two.

5. Prepare for Assessments and Interviews:

- Be ready for online assessments, technical tests, or automated video interviews.
- o Practice mock interviews and common questions to build confidence.

6. **Keep Track of Applications:**

- Use a spreadsheet to track applications, interview dates, and follow-ups.
- Regularly review the status and respond promptly to any recruiter communications.

Follow-up Message

Hi [Name],

I hope you are doing well. I wanted to follow up on my earlier message regarding the [Position Name] role at [Company Name]. I am excited about this opportunity and believe my skills in [mention key skills or experiences briefly] align well with the position.

If you are able to assist with the referral, I would greatly appreciate it. I understand that you may have a busy schedule, so if there's any additional information or support I can provide, please let me know.

Thank you once again for considering my request, and I truly appreciate your time and help.

Best regards, [Your Name]

5. Interview Preparation

Interview preparation is a crucial step in your journey to securing a data analyst role. It involves a structured approach to understanding the job requirements, refining your skills, and practicing to present yourself confidently during interviews. Here's an in-depth guide to help you prepare effectively:

1. <u>Understand the Job Description</u>

- I. **Analyze Key Skills:** Read the job description thoroughly to identify the required skills, such as SQL, Excel, data visualization tools (e.g., Tableau, Power BI), Python, R, and statistics.
- II. **Identify Core Responsibilities:** Understand the main responsibilities, such as data cleaning, analysis, reporting, and presenting insights.
- III. **Research the Company:** Learn about the company's business model, industry, competitors, and the role of data analytics within the organization.

2. Review and Refine Your Technical Skills

- I. **SQL Practice:** SQL is a must-have skill for data analysts. Focus on queries, joins, subqueries, window functions, and writing complex SQL code. Use platforms like LeetCode, HackerRank, and Mode Analytics for practice.
- II. **Excel Skills:** Master functions, pivot tables, VLOOKUP, data cleaning techniques, and data visualization in Excel.
- III. **Data Visualization Tools:** Gain proficiency in Tableau or Power Bl. Practice creating dashboards, using charts, and compellingly presenting data.
- IV. **Programming Languages:** Brush up on Python basics, focusing on data manipulation libraries like Pandas, and NumPy, and data visualization libraries such as Matplotlib and Seaborn.
- V. **Statistics and Probability:** Understand statistical concepts such as hypothesis testing, confidence intervals, regression analysis, and A/B testing.

3. Behavioral Questions Preparation

I. **STAR Method:** Prepare for behavioral questions using the STAR method (Situation, Task, Action, Result) to structure your answers. Focus on examples that showcase problem-solving, teamwork, and analytical skills.

II. Common Behavioral Questions:

• Tell me about a time you used data to solve a problem.

- Describe a challenging project and how you handled it.
- How do you manage tight deadlines or conflicting priorities?
- III. **Prepare Your Stories:** Have stories ready that highlight your key skills, such as analytical thinking, attention to detail, and effective communication.

4. Guesstimates, Case Studies, and Puzzles

- Guesstimates: Be ready for questions like "Estimate the market size of a product."
 Practice structuring your approach logically and clearly.
- **Case Studies:** Companies may present real-life problems. Practice analyzing the data, identifying the problem, and recommending data-driven solutions.
- Puzzles: Some companies like American Express and Wells Fargo ask for puzzles to test your logical thinking. Practice common puzzles available on resources like Geeks for Geeks.

5. Mock Interviews

- **Simulate Real Interviews:** Schedule mock interviews with mentors, and peers, or use platforms like Pramp or Interviewing.io to simulate the interview environment.
- **Get Feedback:** Focus on improving based on the feedback received, especially on areas where you lack confidence or need technical improvements.

6. Prepare Questions for the Interviewer

- Ask Relevant Questions: Show your interest in the role by asking insightful questions, such as:
 - What are the key metrics the team focuses on?
 - O How does the team collaborate with other departments?
 - What challenges does the company face with data analytics?

7. Review Your Projects and Achievements

- Showcase Relevant Projects: Be prepared to discuss your previous work, especially projects that are relevant to the role. Highlight the objective, approach, tools used, and the impact of your analysis.
- **Portfolio:** Maintain a portfolio of your projects with detailed documentation and visualizations that showcase your skills and thought process.

8. Technical Test Preparation

- Prepare for SQL/Excel Tests: Many companies conduct technical tests to assess your SQL, Excel, and sometimes Python skills. Practice similar problems to be well-prepared.
- **Time Management:** Practice solving problems within a set timeframe to simulate test conditions.

9. Confidence and Presentation Skills

- Practice Articulation: Clearly and concisely explain your thought process during problem-solving.
- Body Language: Maintain good eye contact, posture, and a positive tone during your interview.
- Mock Presentations: If the interview involves a presentation, rehearse it multiple times to ensure a smooth delivery.

Data analyst interview preparation

https://www.youtube.com/watch?v=MX6Ee_ubE1s

https://www.simplilearn.com/tutorials/data-analytics-tutorial/data-analyst-interview-questions

https://www.youtube.com/watch?v=h8cr-3vaq7w

500+ Interview Questions On Data Analytics And Business Analytics

https://drive.google.com/file/d/10EcTK95VXc3yuLC2pgWsbp0XTznwbAYG/view

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Let's connect now !!!!!

I am an IIT graduate and have 6 years of work experience working as Analyst, I have appeared in 90+ job interviews and received 25+ job offers from companies like Amazon, Paytm, Zomato, OLX etc.

✓ 1:1 Long Term Mentorship: 10+ individuals have successfully PLACED in top companies like MasterCard, Uber, and Porter by enrolling in my 1:1 Mentorship program.

https://docs.google.com/forms/d/e/1FAlpQLSefKydr62VSD5b5H42FpFMkXMoEWuit0sUY MVjsSUzwqfEQcA/viewform

Book 1:1 Call (One-Time) for Career Guidance, CV Review, Interview etc.: https://topmate.io/mazher_khan

✓ YouTube: https://www.youtube.com/@imzhr.

✓ Instagram: https://www.instagram.com/khan.the.analyst/

Linkedin: https://www.linkedin.com/in/mazher-khan/

- 1. Data Analyst ya Business Analyst Problem
- 2. Start with a Business Problem
- 3. No Degree Needed
- 4. Step me Detailed video banayi hai ..with All FREE Resources
- 5. Kitni Salary as a Fresher and kya career graph
- 6. Companies list me apply kr skte ho
- 7. Aur video k end mai maine Projects, Resume and Interview Tips Share kie hain
- 8. To Chlie Shuru krte hain
- 9. Requirement
- 10.
- 11.
- 12. Last me 1:1 Mentorship Enroll
- 13. Lets connect now!

https://drive.google.com/file/d/1n0TygV7CQLSdPABOSMEvamHbxaXy8cuu/view

100+Mnetees ko mentore krne k bd

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